



The SET Plan need for Energy Research Infrastructures

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Publication date:
2010

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Citation (APA):
Bindslev, H. (2010). *The SET Plan need for Energy Research Infrastructures*. Abstract from Eneri 2010 - Infrastructures for Energy Research, Brussels, Belgium.

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The SET Plan need for Energy Research Infrastructures

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Europe's commitment to significant reductions in CO₂ emissions by 2020 requires concerted action to accelerate deployment of sustainable energy technologies while improving competitiveness of the technologies which can deliver on this time horizon. Research infrastructures (RIs) close to realisation, or existing RIs with possible upgrades, are needed to support industrialisation and deployment. With deep emission reductions required by 2050 changes to the energy system made till 2020 need to prepare for and be compatible with the major changes required by 2050. RIs with focus on system aspects are needed to help guide this.

To meet the 2050 emission objectives, minimising the price to society and strengthening European competitiveness, multiple paths of innovation are optimal: Existing technologies must undergo continued development and radically new concepts and approaches, with high risk and high gain, must be explored. This requires RIs supporting fundamental as well as targeted research, RIs that support the scientific process of challenging existing understanding and providing new insight. This requires flexibility in the RI and great access to extracting observations. Later RIs demonstrating and challenging specific concepts are required.

The innovation chain runs through the open exploration, via targeted development, over demonstration to industrialisation. The RIs supporting the early phase are typically optimised for flexibility and rich in observables. Those supporting the later phases are typically optimised towards a specific implementation and embracing industrial optimisation. These RIs are as a consequence generally less flexible and with less access for detailed observations.

Innovation is not a linear process: challenges will be found in the latter part of the innovation chain which raise fundamental questions needing address by research and investigation in the more flexible RIs supporting the earlier stages. The most efficient and most rapid development needs the support from multiple RIs optimised to the different stages rather than one demonstration facility with accommodations to act as a RI.

Europe would profit from using optimally the RIs already available in member state programmes. Here is valuable to map what is available, give wider access and coordinate networked RIs. Some would need updating to be optimal in a wider context. EERA is performing such mapping and networking in its joint programmes. RI with costs and risks not compatible with member state programmes could be considered as Pan European RIs. ESFRI has just formulated such needs and EERA is continuing to build on this and supporting proposed RIs.

For optimal development and exploitation, the RIs need to be conceived as part of a strategic research agenda and integrated in the road maps and work plans delivering on the agenda. EERA, the Technology Platforms and Industrial Initiatives all have essential roles in ensuring this.